

Study shows nearly 70 percent of cannabidiol extracts sold online are mislabeled

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In recent years, there has been an increased interest in the medicinal use of Cannabidiol (CBD), a chemical that naturally occurs in the cannabis plant (aka "marijuana"). There is interest in CBD as a medicine because

there is some evidence that it has medical benefits, but it does not make people feel "high" and there is no indication that CBD, by itself, is abused. Recent research has shown potential therapeutic effects of CBD for young children with rare seizure disorders, and patients in states where cannabis or CBD have been legalized report using it for a variety of health conditions. Business experts estimate that the market for CBD products will grow to more than \$2 billion in consumer sales within the next three years. While interest in this area continues to grow, little has been done to ensure regulation and oversight of the sale of products containing CBD. The primary reason for this is that CBD is currently classified as a Schedule I controlled dangerous substance by the DEA, despite having been legalized for medicinal use in many states. Thus, many people do not have access to stores that sell CBD products and instead rely on online retailers to purchase CBD products.

A new study by a Penn Medicine researcher, published this week in *JAMA*, found that nearly 70 percent of all [cannabidiol](#) products sold online are either over or under labeled, causing potential serious harm to its consumers. Marcel Bonn-Miller, PhD, an adjunct assistant professor of Psychology in Psychiatry and the lead author on the study, believes the mislabeling of cannabidiol products is a direct result of inadequate regulation and oversight.

"The big problem, with this being something that is not federally legal, is that the needed quality assurance oversight from the Food and Drug Administration is not available. There are currently no standards for producing, testing, or labeling these oils," Bonn-Miller said. "So, right now, if you buy a Hershey bar, you know it has been checked over; you know how many calories are in it, you know it has chocolate as an ingredient, you know how much chocolate is in there. Selling these oils without oversight, there is no way to know what is actually in the bottle. It's crazy to have less oversight and information about a product being widely used for medicinal purposes, especially in very ill children, than a

Hershey bar."

For a month, Bonn-Miller and his team of researchers conducted internet searches to identify and purchase CBD products available for online retail purchase that included CBD content on the packaging. The team purchased and analyzed 84 products from 31 different companies and found that more than 42 percent of products were under-labeled, meaning that the product contained a higher concentration of CBD than indicated. Another 26 percent of products purchased were over-labeled, meaning the product contained a lower concentration of CBD than indicated. Only 30 percent of CBD products purchased contained an actual CBD content that was within 10% of the amount listed on the product label. While studies have not shown that too much CBD can be harmful, products containing either too little or too much CBD than labeled could negate potential clinical benefit to patients. Further, the variability across products may make it troublesome for patients to get a reliable effect.

"People are using this as medicine for many conditions (anxiety, inflammation, pain, epilepsy)," Bonn-Miller explained. "The biggest implication is that many of these patients may not be getting the proper dosage; they're either not getting enough for it to be effective or they're getting too much."

According to Bonn-Miller, a number of products also contained a significant amount of THC—the chemical compound in cannabis responsible for making a person feel "high"—which has been shown cause cognitive impairment and other adverse health effects. "This is a medication that is often used for children with epilepsy, so parents could be giving their child THC without even knowing it," he said.

In a previous study, Bonn-Miller and colleagues analyzed cannabinoid dose and label accuracy in edible medical cannabis products and found

similar discrepancies. He hopes this and future studies will call attention to the impact of inconsistent cannabis product labelling.

"Future research should be focused on making sure people are paying attention to this issue and encouraging regulation in this rapidly expanding industry."

More information: *JAMA* (2017). [DOI: 10.1001/jama.2017.11909](https://doi.org/10.1001/jama.2017.11909)

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